Photosynthesis in Relation to Model Systems

Topics in Photosynthesis, Volume 3

Edited by J. Barber
Elsevier/North-Holland; Amsterdam, New York, 1979
xii + 434 pages. Dfl 180.00, $87.75

In 1977 I reviewed for *FEBS Letters* the first book in the series 'Topics in Photosynthesis'. I found it to be excellent and I expressed the hope that subsequent volumes would reach the same high standard.

After examination of volume 3, I am pleased to report that excellence has been maintained. The book begins with a chapter by Borisov on 'Photosynthesising Organisms as Converters of Solar Energy'. This is followed by an examination of the organisation of photosynthetic pigments (Thornber and Barber), electron transfer in bacterial reaction centers (Blankenship and Parsons), light-dependent effects on model membranes containing various photosynthetic molecules (Tien and Skulachev), bacteriorhodopsin (Schreckenbach), fixation of chloroplasts as a source of hydrogen in vitro (Krasnovsky, Krishna Rao and Hall, Hallenbeck and Benemann). Finally, there is a chapter on photosynthetic nitrate reduction (Losada and Gueñero).

Overall, this is an excellent book which can be recommended without reservation to research workers. It should find a place not only on library shelves but also on one's desk.

B. Halliwell

Reviews of Physiology, Biochemistry and Pharmacology, Volume 84

(formerly Ergebnisse der Physiologie, biologischen Chemie und experimentellen Pharmakologie)

Edited by R. H. Adrian, E. Helmreich, H. Holzer, R. Jung, O. Krayer, R. J. Linden, F. Lynen, P. A. Miescher, J. Piiper, H. Rasmussen, A. E. Renold, U. Trendelenburg, K. Ullrich, W. Vogt and A. Weber
Springer-Verlag; Berlin, Heidelberg, New York, 1978
240 pages. DM 78.00, $39.00

This volume continues the tradition of the series and contains three authoritative and timely reviews. Their diversity, however, make it difficult to review the book as the reviewer is unlikely to be well aquainted with more than one of the subjects treated.

The first review, of 92 pages including some 500 references, is on *Cellular and Molecular Events in the Delayed-Onset Hypersensitivities* by H. P. Godfrey (New York, USA) and P. G. H. Gell (Birmingham, England). After classifying hypersensitivities by mechanism, the review deals in turn with the antibody-dependent, basophil-associated type, the macrophage cytophilic antibody and antibody-dependent macrophage-associated type, and 'classic' delayed hypersensitivity. Finally there is a section on transfer factor that includes some comments on its therapeutic use. Certainly this review illuminates and clarifies what is an extremely complex field.

There follows a review by E. Wintersberger (Vienna, Austria), 50 pages long containing some 350 refer-

ences, on *DNA Replication in Eukaryotes.* This excellent and readable chapter deals with the structure and replication of chromatin, the enzymology and regulation of DNA replication, the synthesis of chromosomal proteins, the fidelity of DNA replication, and the mechanism of gene amplification. Then there is a section on the replication of mitochondrial DNA. The chapter ends with a look ahead at the problems that still have to be solved in this field and at possible ways in which these might be tackled.

The last review is on *The Kinin System: Its Relation to Blood Coagulation, Fibrinolysis and the Formed Elements of the Blood* by H. Z. Movat (Toronto, Canada). It extends for 60 pages and includes some 300 references. The topics covered are factor XII, prekallikrein and kallikrein, the kininogens, the fibrinolytic system, plasma proteinase inhibitors, and bradykinin and related kinins. This is a complex area but the reviewer shows us how factor XII plays a central role since by its activation three cascading systems are sent into motion: the intrinsic clotting, the fibrinolytic, and the kinin forming. Further, interactions of some of the components of one of the systems with those of another system are described.

The high standard of this series has been maintained with this volume and librarians should be encouraged to continue taking it for their shelves. Whether individuals will purchase copies will depend on their interests. The production is excellent, the reviewer found no typographical errors, and the volume contains both a comprehensive subject and an author index.

S. P. Datta

Mechanisms of Tumor Promotion and Cocarcinogenesis

Carcinogenesis – A Comprehensive Survey, Volume 2

Edited by T. J. Slaga, A. Sivak and R. K. Boutwell
Raven Press; New York, 1978
xviii + 588 pages. $58.50

This volume is based on a symposium sponsored by Oak Ridge National Laboratory and contains much information which will be of interest to biochemists. There are 40 individual contributions collected into six sections plus a summary. The pioneer work of I. Berenblum, who contributes the first article, and others showed more than two decades ago that chemical carcinogenesis in mouse skin can be experimentally dissected into a two-stage process of initiation and promotion. The act of initiation involves an irreversible change to a 'premalignant' state and the carcinogenic process is completed by the process of promotion. Most chemical carcinogens are both promoters and initiators, but a group of compounds are known which are not significantly carcinogenic themselves but which, when added after an initiator, greatly increase the tumour yield and shorten the time period between initiation and tumour occurrence. These materials are pure promoters and the most potent known are naturally occurring phorbol 12,13 diesters present in croton oil. The second article in this book, by E. Hecker, is an excellent summary of the chemistry, distribution and structure/activity relationships of these and related compounds. There are indications in this and a subsequent article that promoters may have significance in the aetiology of some human cancers. Several of the chapters in the book are devoted to studies of tissues other than skin. Although not all the articles are completely convincing, the reader is left with the very strong impression that the two-stage process of initiation and promotion is probably generally valid.

Many of the articles in this book discuss the very profound biochemical effects of phorbol esters on cells.